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  - Small-scale influence of thresholds in past history
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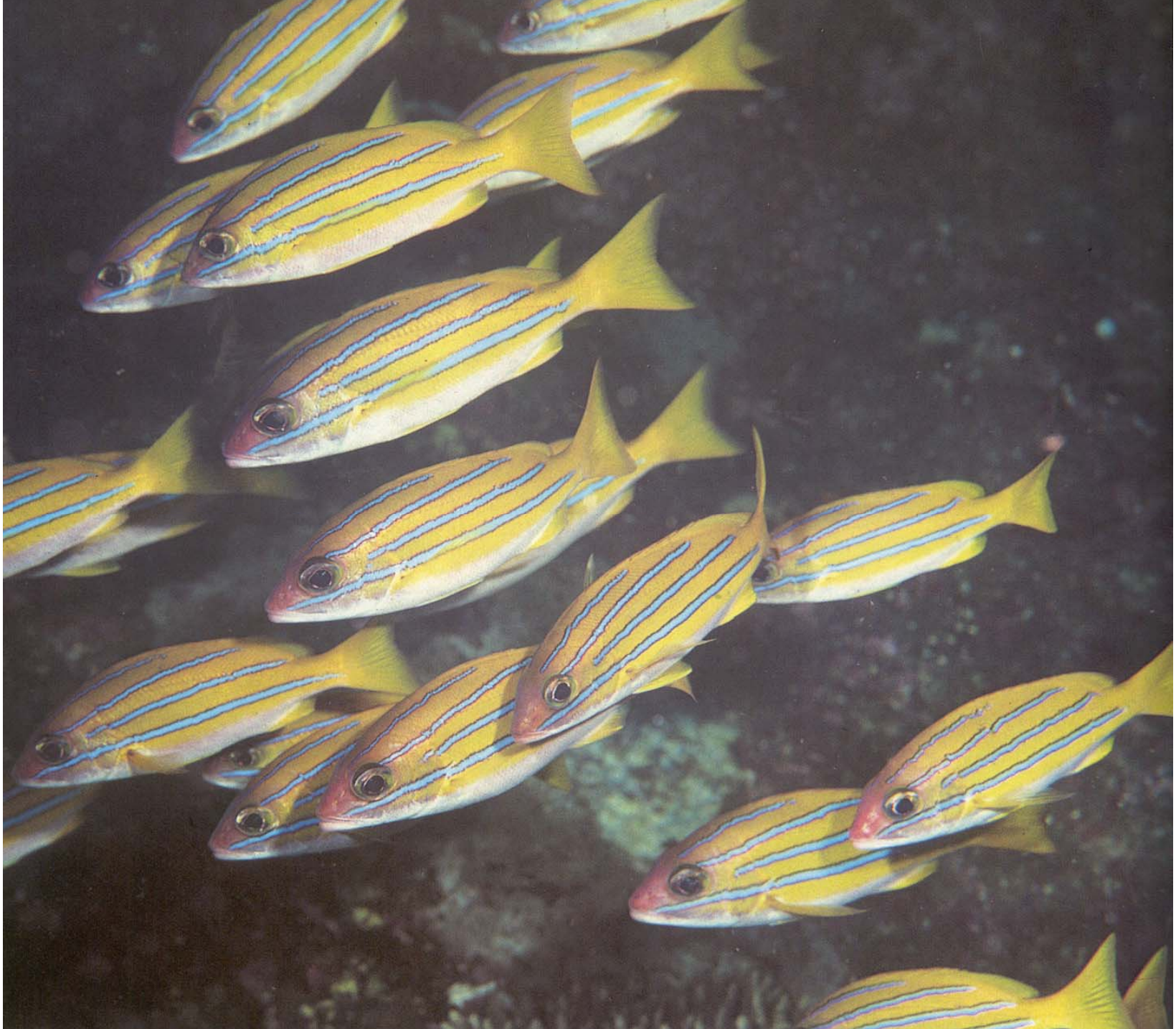
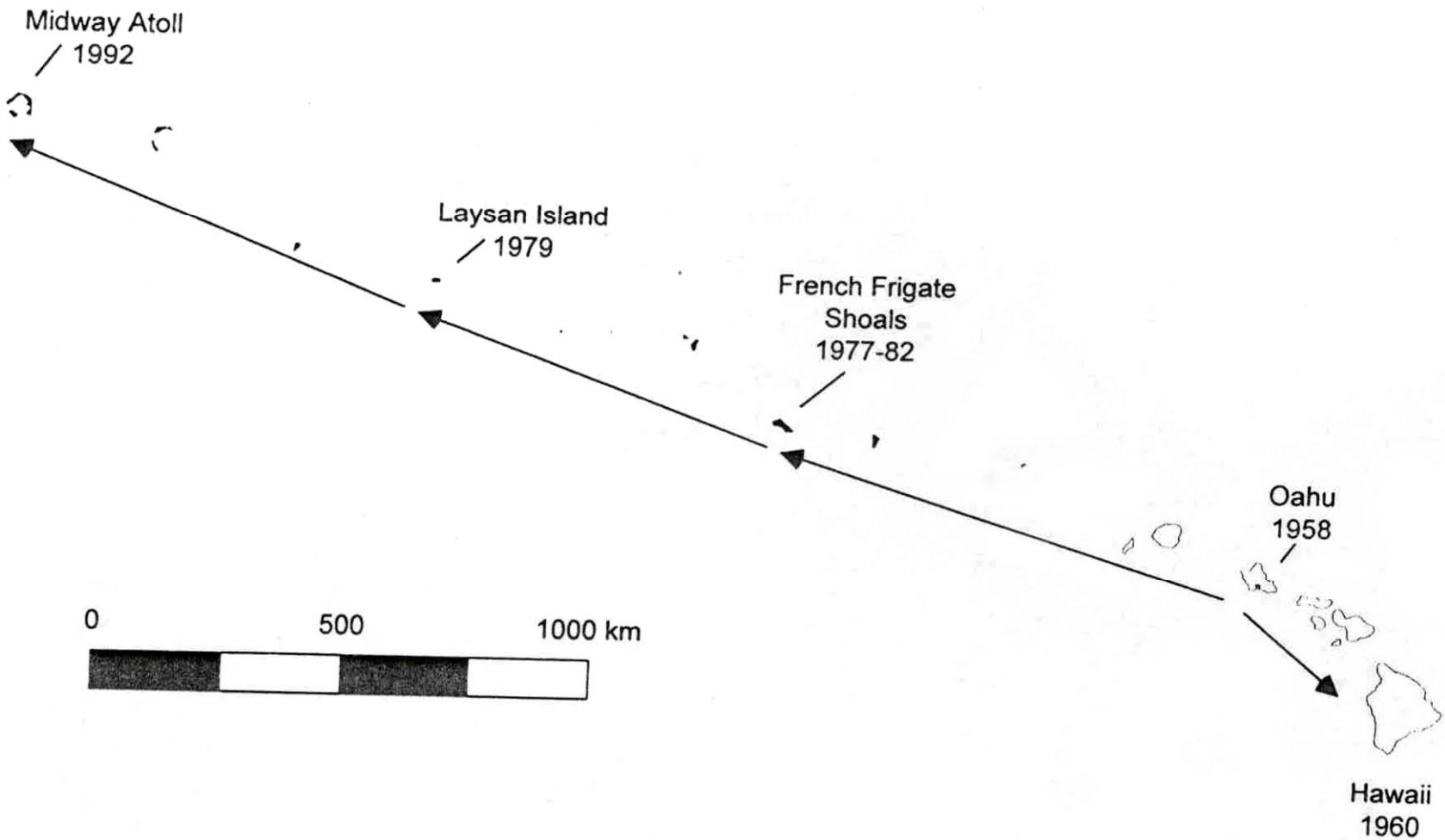
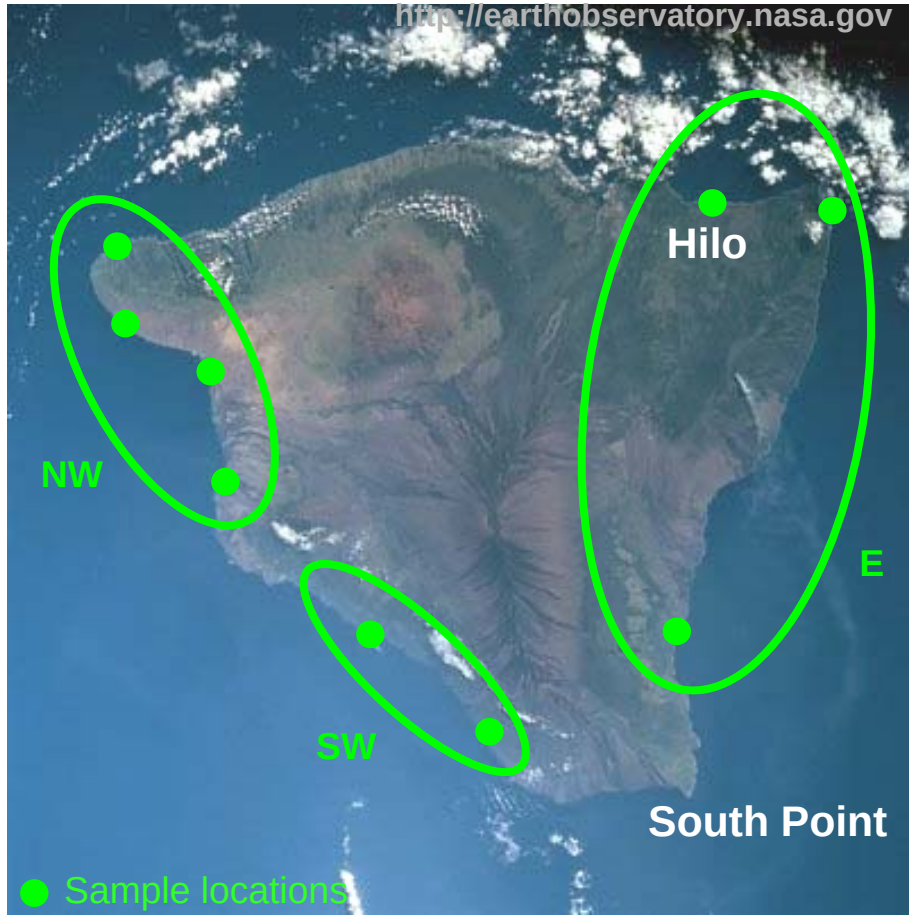
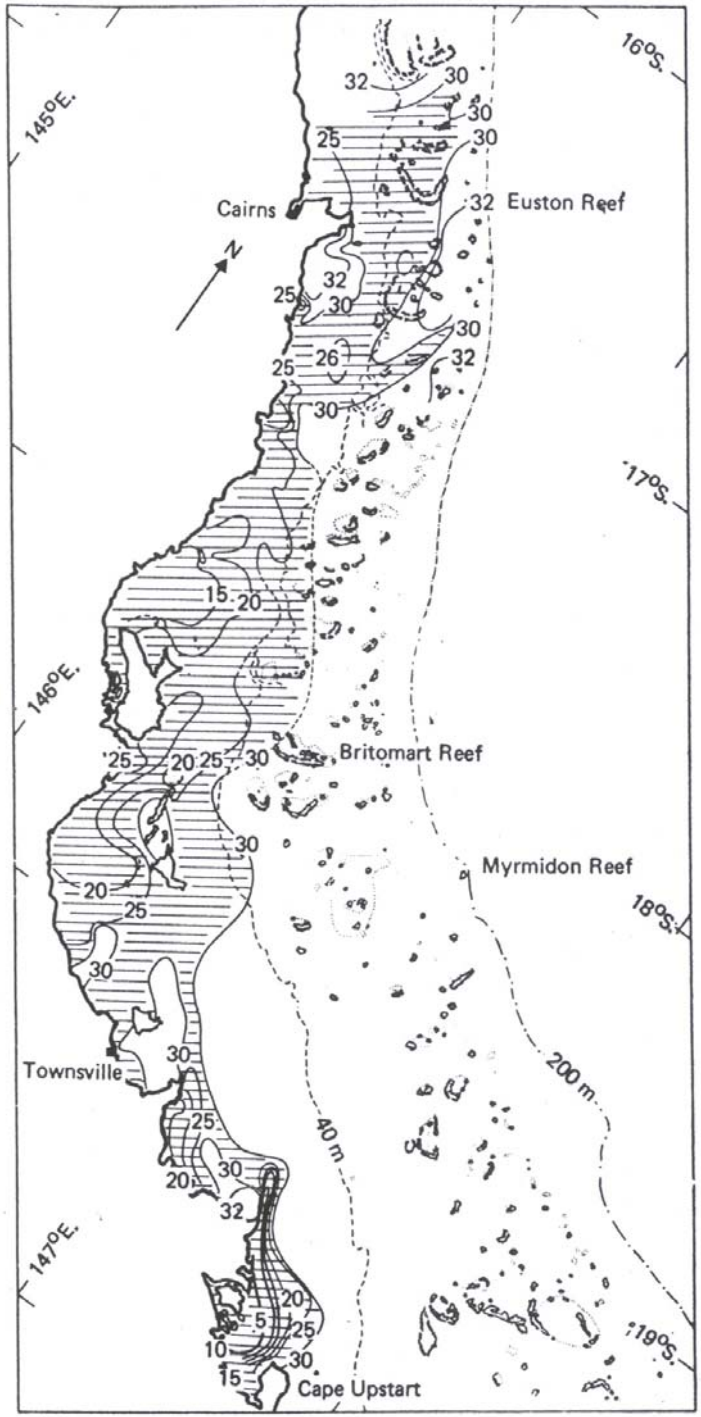


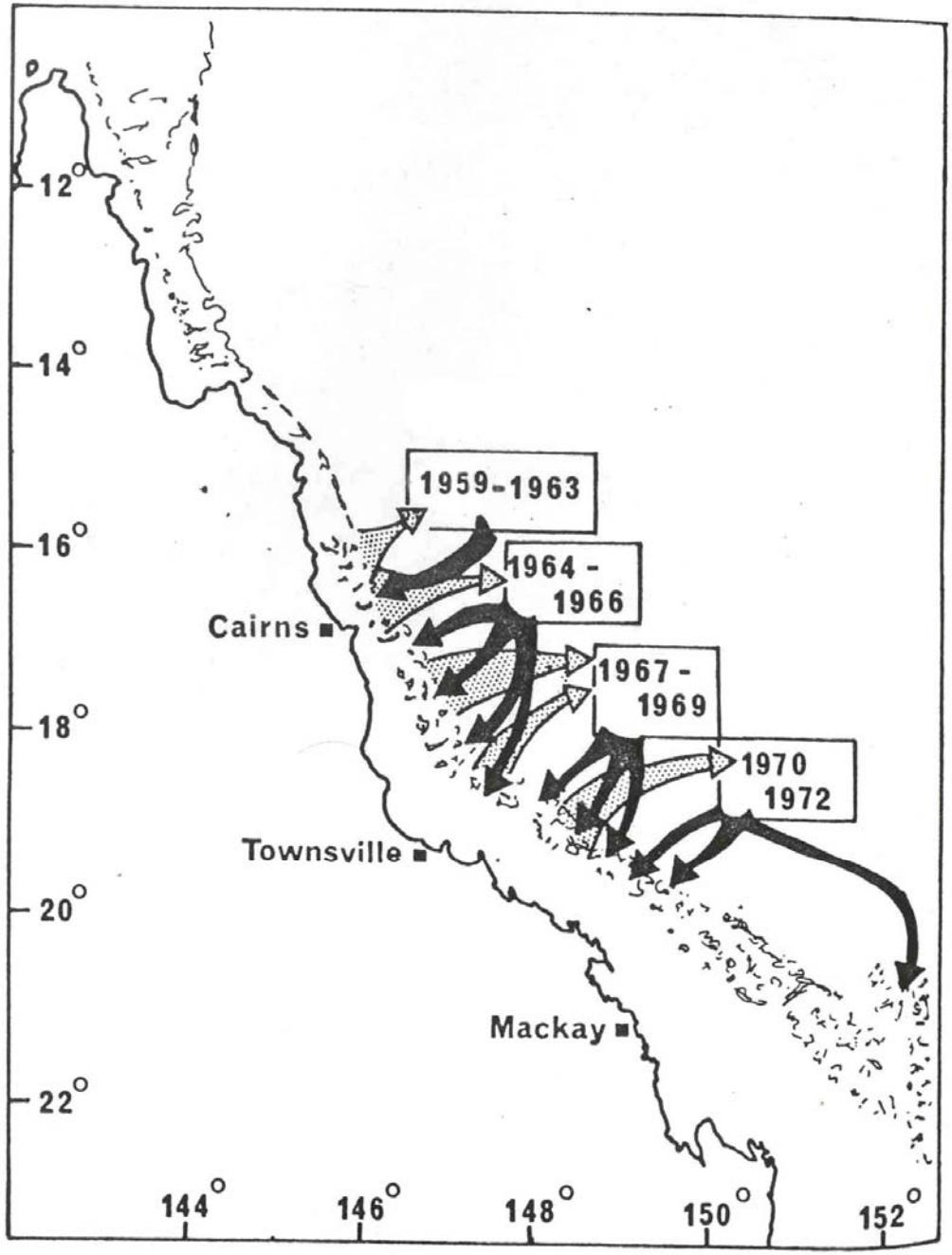

Midway Atoll
1992
Laysan Island
1979
French Frigate
Shoals
1977-82
Oahu
1958
Hawaii
1960
0
500
1000 km

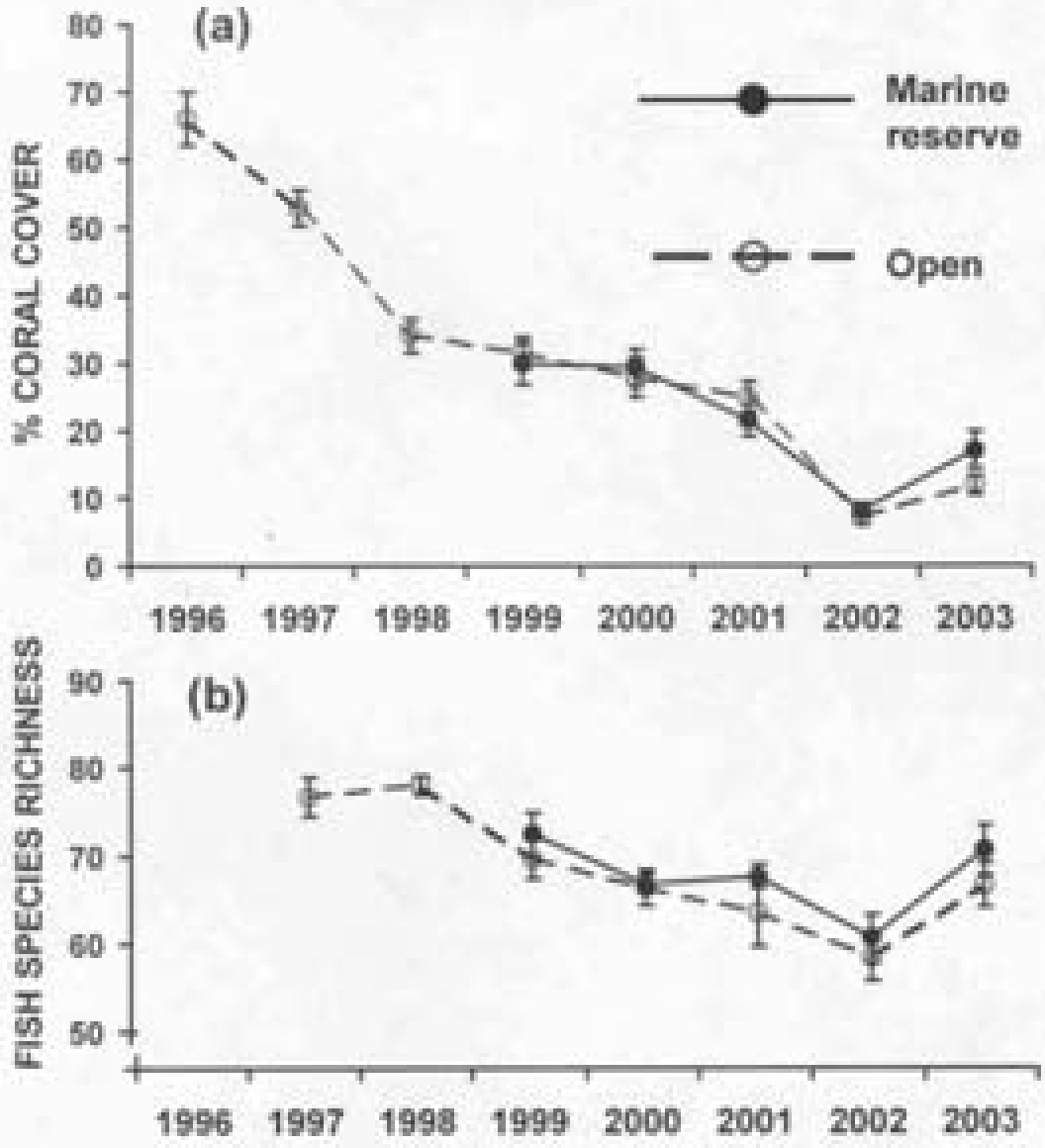
Dendropoma gregaria

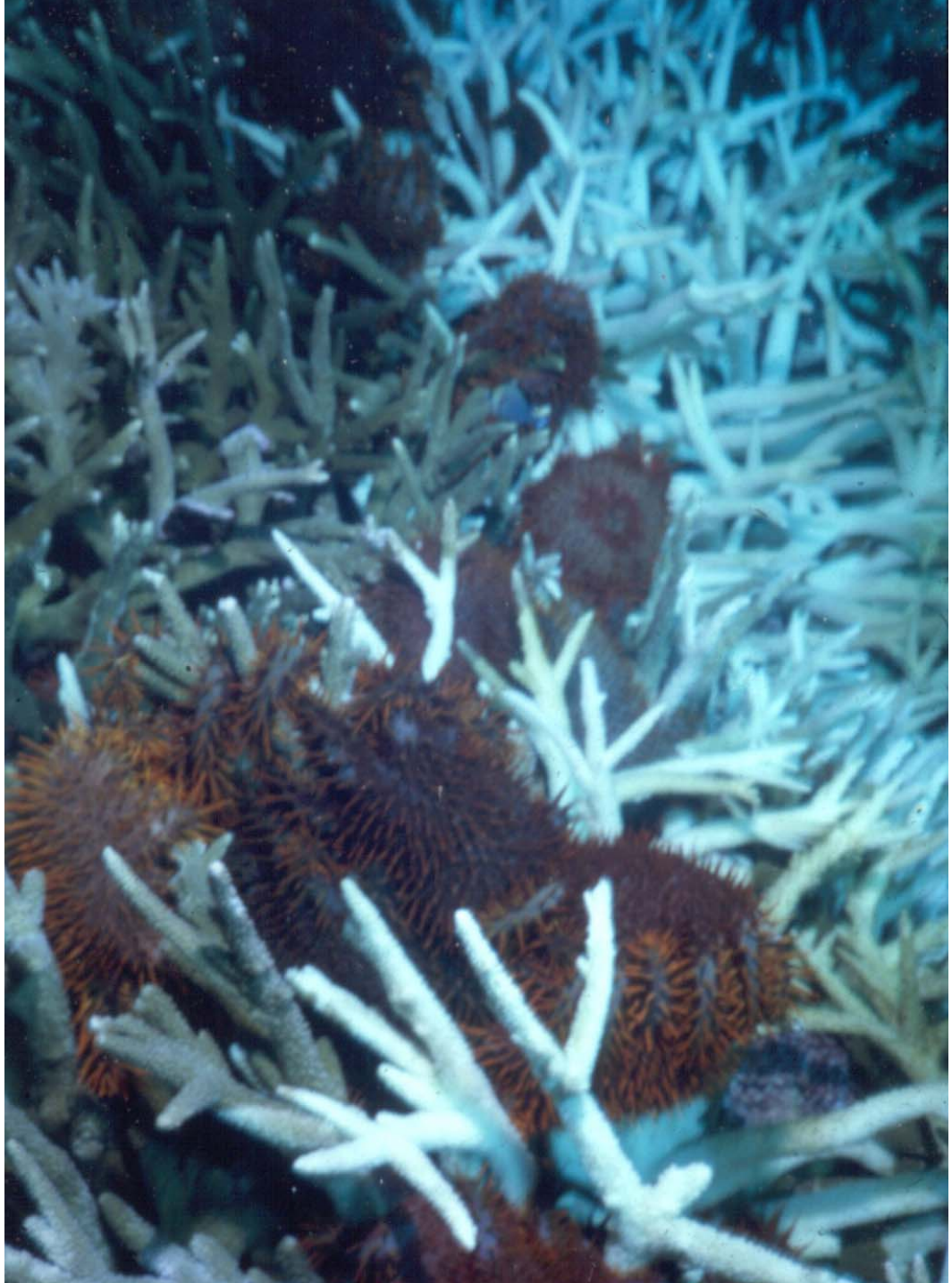
Dendropoma rhyssoconcha

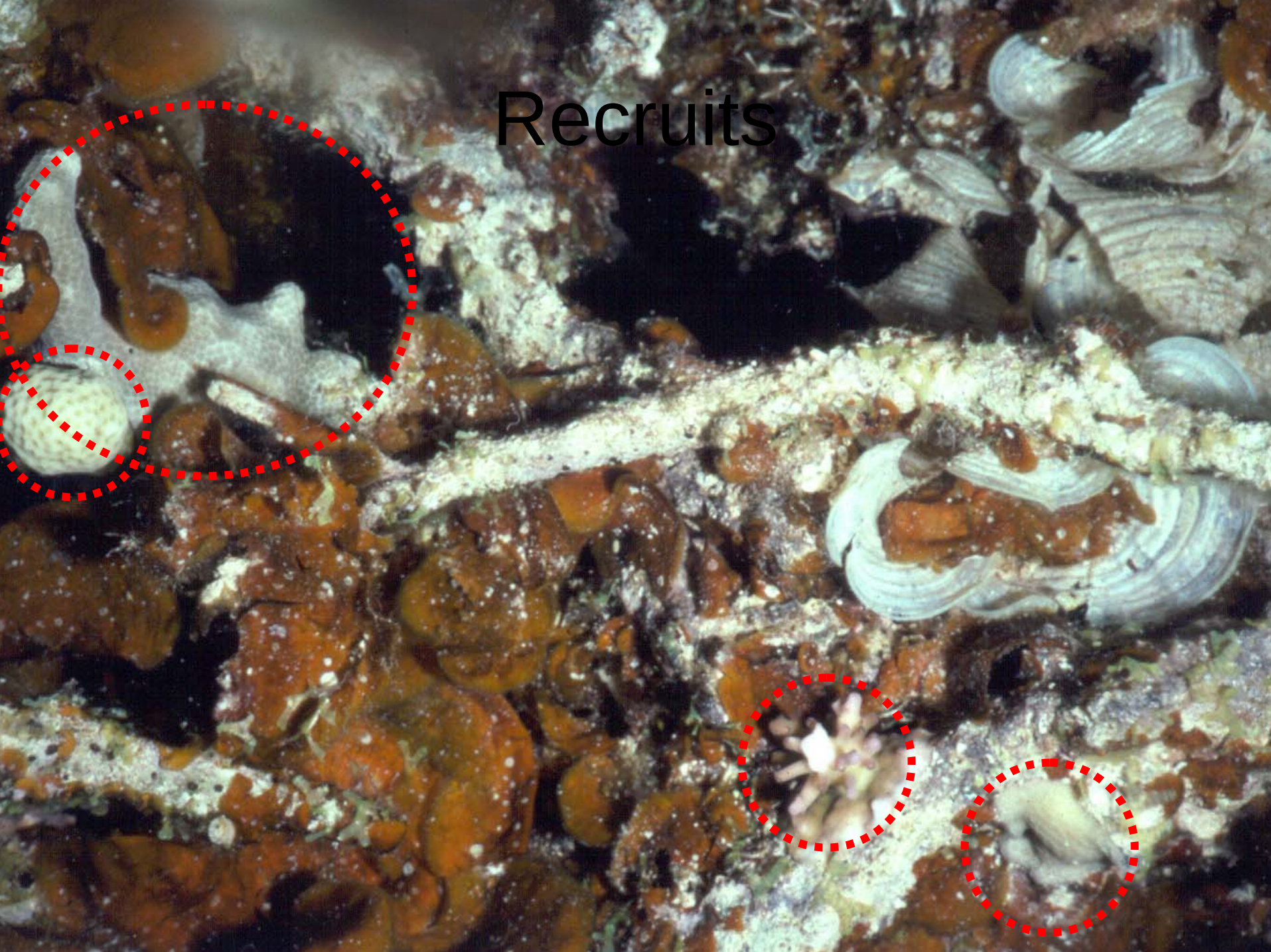



145°E.
146°E.
147°E.
16°S.
17°S.
18°S.
19°S.
Cairns
Euston Reef
Britomart Reef
Myrmidon Reef
Townsville
Cape Upstart
200 m
40 m
N


12°
14°
16°
18°
20°
22°
144°
146°
148°
150°
152°
1959-1963
1964 - 1966
1967 - 1969
1970 1972
Cairns
Townsville
Mackay

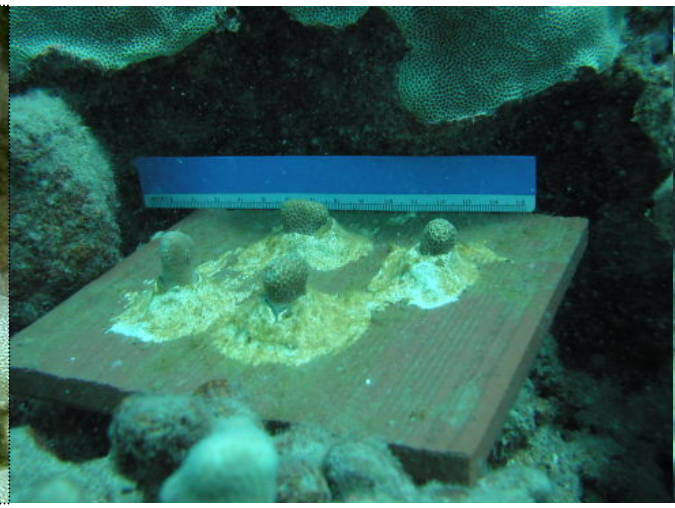

(a)
% CORAL COVER
80
70
60
50
40
30
20
10
0
Marine reserve
Open
1996
1997
1998
1999
2000
2001
2002
2003
(b)
FISH SPECIES RICHNESS
90
80
70
60
50
1996
1997
1998
1999
2000
2001
2002
2003



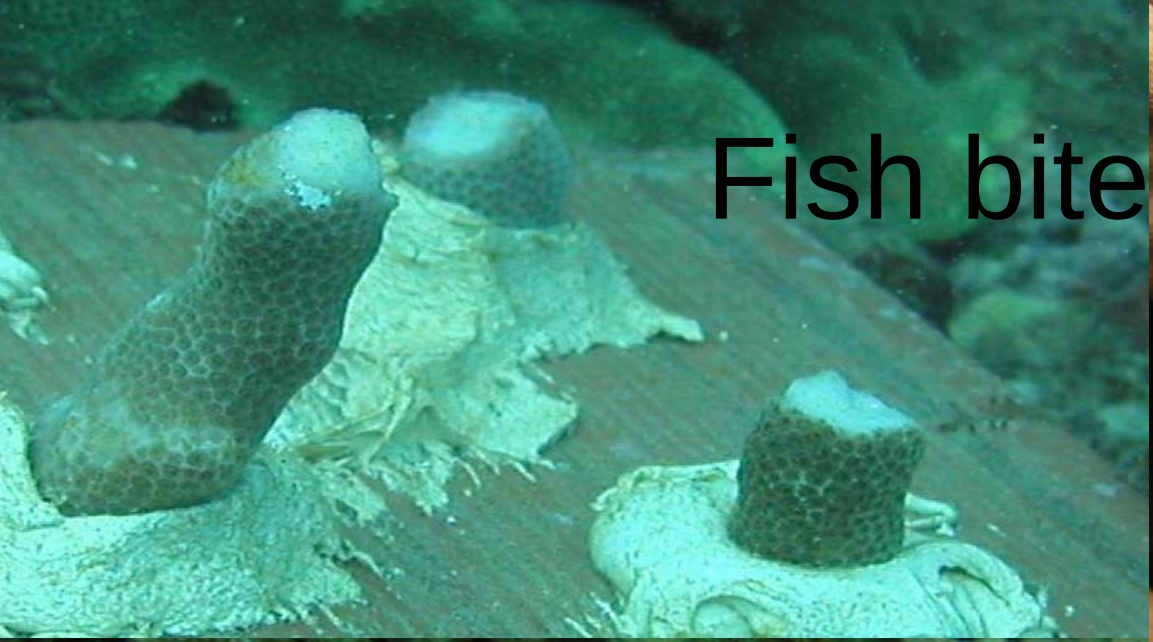

Recruits

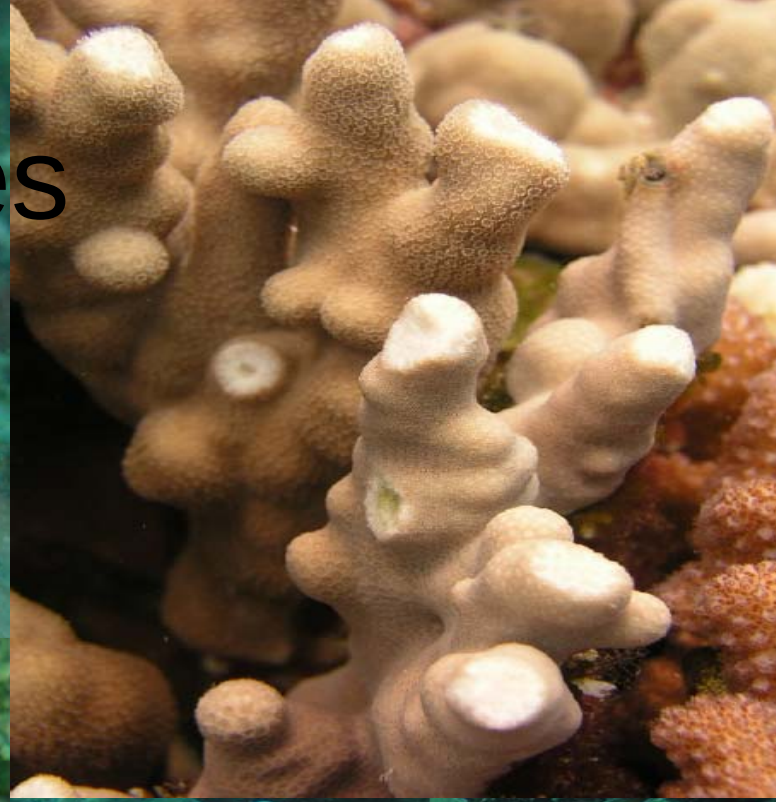

Palau 1999

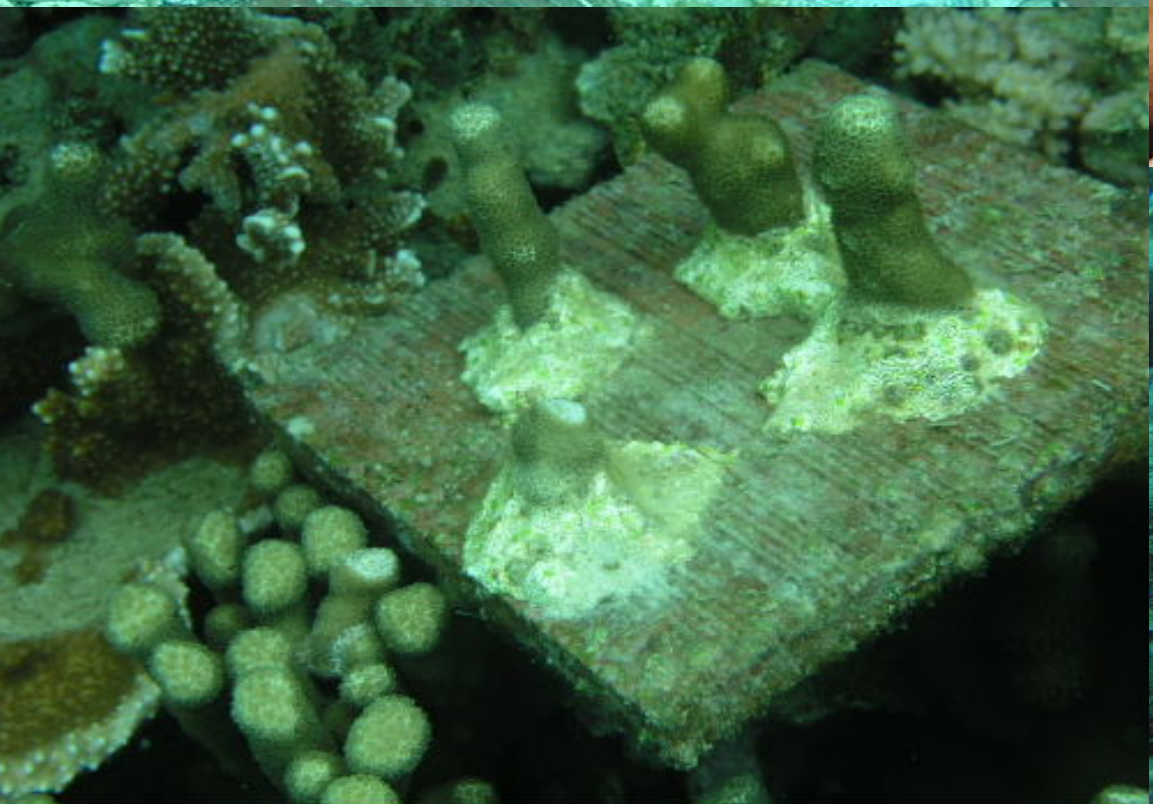
Determining Juvenile Survival

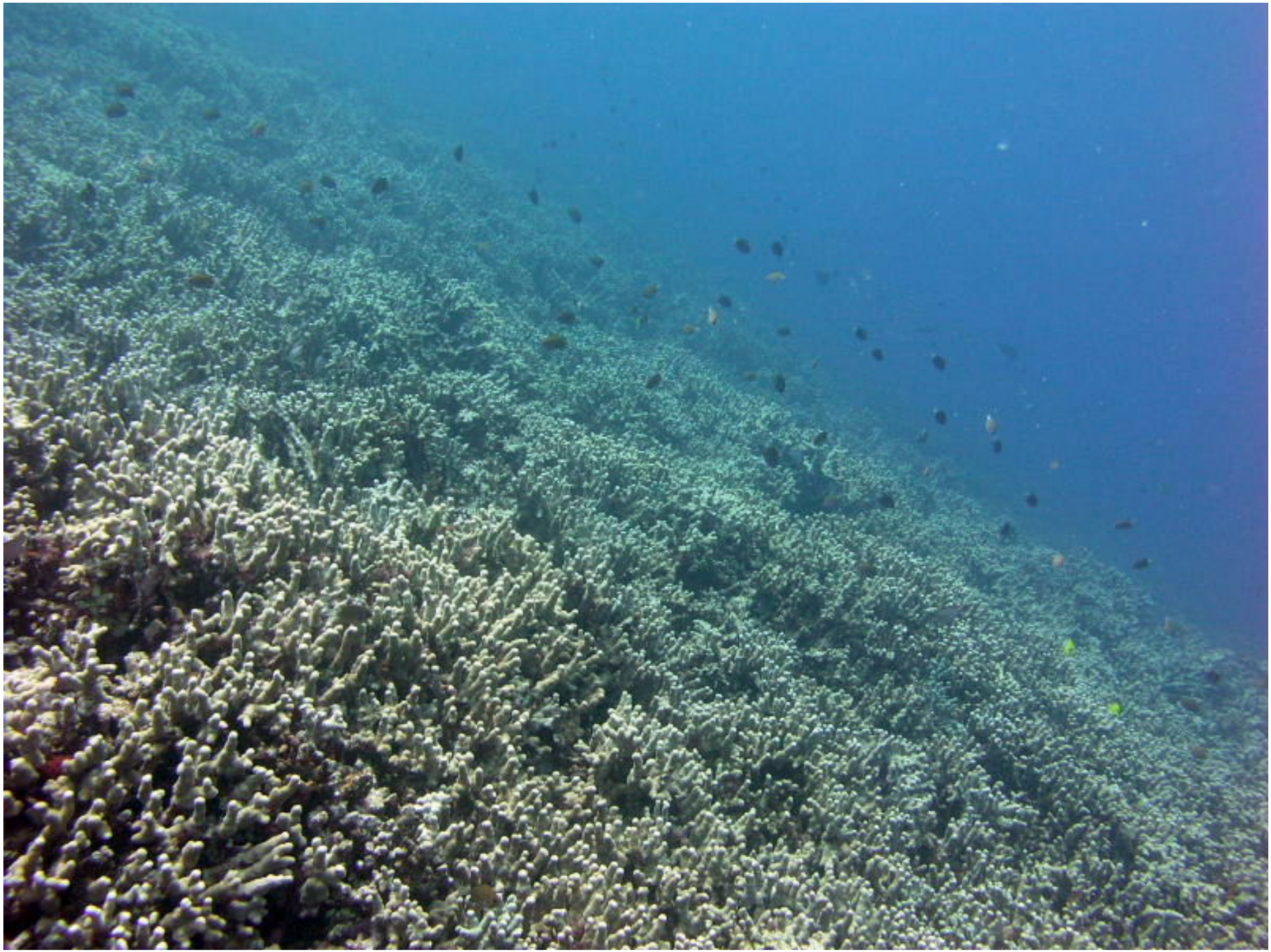


Fish bites

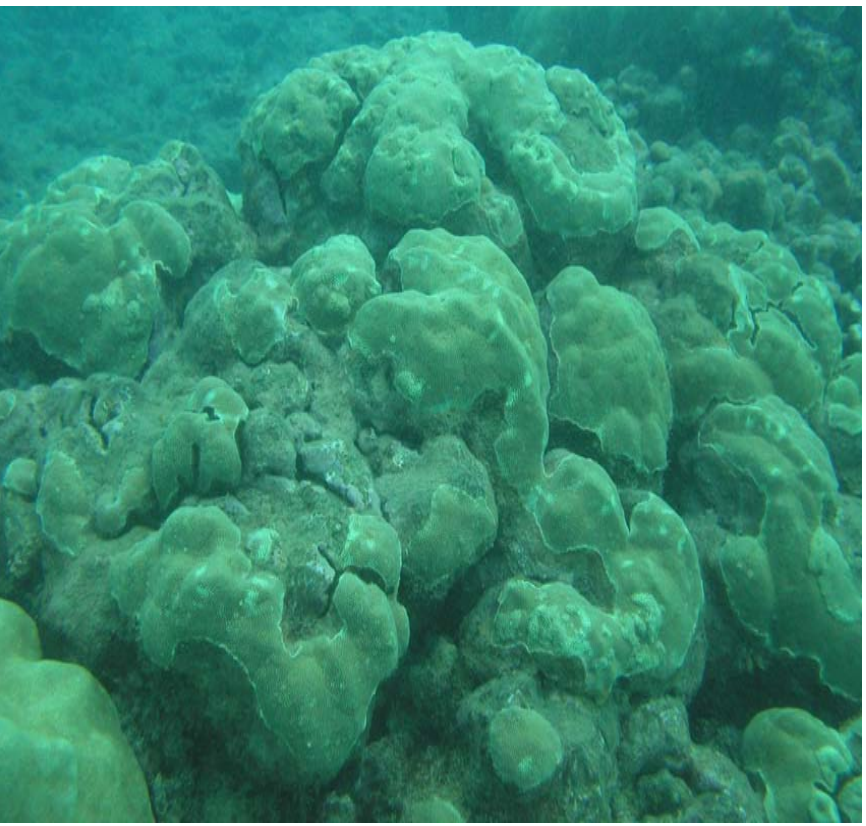








Propagation at Hanauma Bay (MLCD)



- **1.5% colonies originate from sexual reproduction**

  - majority are asexual remnants

- **Using definition: sexual recruits < 5 cm diameter**

  - only 0.1% of total calculated colonies are recruits

THRESHOLDS in RECENT HISTORY

- Allee effect
- Disproportionate predator population
- Disproportionate prey population
- Bioerosion
- Decreased topographic complexity
- Decreased crustose calcareous algae
- Alien invasive species establishment

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